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# Evaluation of the views of pre-service teachers taught with Moodle during the course named "instructional technology and material design" on the use of teaching materials

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**Abstract:**

In this study, views of pre-service teachers on whether Moodle can be utilized during the course named Instructional Technology and Material Design were investigated. Participants in the study were of 196 students in total from Physics, Chemistry, Biology, Turkish Language and Philosophy departments. During the teaching period, teaching-oriented course materials, which were suitable in terms of their field of study and developed in Moodle environment, were utilized weekly during the sessions of Instructional Technology and Material Design. After a period of one semester teaching, student view scale which was developed by the researcher was administered. The data were analyzed using t-test and Anova. According to the findings, it was concluded that the materials developed using Moodle can be used in the flow of Instructional Technology and Material Design.

*Keywords: Instructional Technology and Material Design; Moodle; material use; learning; teaching.*

## 1. Introduction

Development of technology and media has led to new insights in the search for a new style of teaching and learning. This demand has been met much better with the convenience of computers. In parallel with the rapid change in technology, educational sciences has also taken its share of space. Drastic increases in the information and together with the number of students have always resulted in new problems. The need for new methods and technologies has originated from the fact that a variety of students with different individual differences has entered the system of education. Web-based education, which solves the restrictions of traditional education such as time, setting and teaching staff, is a flexible option for education. There are numerous learning management systems available for web-based education. Although software license costs seem to be one of the major problems of web-based education, it is possible to overcome this issue thanks to some open source software.

Moodle which stands for Modular Object-Oriented-Dynamic-Learning-Environment-Flexible Object-Oriented Dynamic Learning Environment is an open source system for distance education. Moodle which is a system for online course management and making websites, takes many specialized training and pedagogical principles into account while having the capacity to meet the needs of educators in various ways. With its support for 77 different languages, it has been preferred among 193 countries. Moodle project, which is supported and managed by the company in Perth Western Australia since 2005 by Martin Dougiamas, is being developed by a core team and

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volunteer users under the organizational structure "Moodle Partners". Lessons are composed of modules and Linux, Unix, Windows and Mac OS X operating systems are supported. It can work at PHP environments and the MySQL or PostgreSQL are used for database. Independent of any platforms, it has a flexible structure which provides easy management and a customization with a rich collection of visual themes. The most important reason to be preferred is that it can be used by everyone easily. Moodle has many distinctive features such as allowing text and graphics on web pages and the transmission of sound and vision as well as making use of Java and ActiveX technologies (www.moodle.org).

Such features of web pages provide a limitless learning environment while changing the traditional classroom environment. This feature also provides the basis for the creation of teaching oriented web pages. Web pages prepared for teaching allows for carrying out the classical classroom education in a more systematic and organized way with the Internet support (Karaman, 2007). In addition, web-based teaching supports the current teaching methods (Elmaz, Doğan, Biroğul,Koç, 2008). According to research, web-pages are found out to be looming large as they can be used without professional computer skills as well as other distinctive features such as updatability and user friendly interface (Bertrand and Franklin, 1995). On the other hand, there are students with a variety of prior knowledge and skills. Web-based training helps teachers to prepare learning environments suitable for such students with different characteristics. (Mathew and Dohery-Poirier, 2000). Apart from this, teaching oriented web pages can be used in order to encourage off-task students to participate in the classroom (Poindexter and Heck, 1999).

Evaluation and investigation of Moodle web pages prepared by pre-service teachers who are going to teach the following year will enable a better understanding and provide rich materials to be used thereafter in their classes. In addition, such a discovery by pre-service teachers might result in the development of different instructional methods and use by them when they start teaching (Dertlioğlu, 2008). Pre-service teachers will be in need of using different materials in different lessons. For the learning to be permanent, materials should be designed in a way that they are suitable with curriculum objectives, content and students interests. In this sense, use of materials is important for an effective teaching.

This study aims to evaluate the views of the pre-service teachers taught using Moodle in Instructional Technologies and Material Design on the use of teaching materials in term of various variables.

Based on evaluating the views of pre-service teachers taught using Moodle in Instructional Technologies and Material Design on the use of materials in lessons, the study seeks answers to following questions:

1. Is there a significant difference in the views according to gender among the pre-service teachers who were taught using Moodle in Instructional Technologies and Material Design on the use of materials in lessons?
2. Is there a significant difference in the views according to educational level among the pre-service teachers who were taught using Moodle in Instructional Technologies and Material Design on the use of materials in lessons?
3. Is there a significant difference in the views according to age among the pre-service teachers who were taught using Moodle in Instructional Technologies and Material Design on the use of materials in lessons?
4. Is there a significant difference in the views according to the place they live among the pre-service teachers who were taught using Moodle in Instructional Technologies and Material Design on the use of materials in lessons?

## 2. Method

As this study is to evaluate the views of pre-service teachers who were taught with Moodle during the course named Instructional Technologies and Material Design on the use of materials in lessons, a descriptive type survey model is utilized for this study. The purpose of selecting survey model is to describe knowledge, events and conditions in the past, today and the future with a rigid style of objectivity. That is, it is a type of model aiming to observe and describe without any bias (Ay, 2007; Karasar, 1991).

### *2.1. Population and Sampling*

This study possesses a population of pre-service teachers who were students at Afyon Kocatepe University, Faculty of Education, in undergraduate and Master's program without thesis and taught with Moodle during the

course named Instructional Technologies and Material Design throughout the 2009-2010 academic year spring semester. The sampling includes 196 pre-service teachers.

This study, which was an extra-curricular activity, was initialized with the introduction of Moodle and showing examples to the participants by the researcher. Participants were asked to sign up for the website. Also they were told to follow all the teaching and learning activities only through the website until the end of the course.

### *2.2. Data Collection Tool*

The researcher initially carried out a literature review. Then the researcher developed "Questionnaire of student views on the use of materials" primarily based on "Questionnaire of student views on the use of materials in biology lessons" by Ensari and Kete (2010). This questionnaire was reviewed by professional eye and in the end it turned out to be a 5 point Likert scale consisting of 27 items.

### *2.3. Data Collection and Analysis*

Participants were asked to fill out the questionnaire developed for this study. The instrument included responses from Totally Agree (5 points) to Totally Disagree (1 point). T-test (Independent Samples T-Test) was administered to find out any significant difference for the variables namely gender and age. To determine if there is a significant relationship according to age and the place they live, one-way Anova was utilized. The findings were presented in the Findings and Conclusion section of this study.

## 3. Findings

Is there a significant difference in the views according to gender among the pre-service teachers who were taught using Moodle in Instructional Technologies and Material Design on the use of materials in lessons?

Table 1. The relationship between gender and views on the use of materials among the pre-service teachers

| Items | Gender | n | X | S.S. | T | df | Sig. |
|---|---|---|---|---|---|---|---|
| Item 1 | Female | 130 | 4.57 | .55 | 2.69 | 194 | .00 |
| | Male | 66 | 4.30 | .85 | | | |
| Item 2 | Female | 130 | 4.58 | .58 | 2.35 | 194 | .02 |
| | Male | 66 | 4.36 | .69 | | | |
| Item 4 | Female | 130 | 1.79 | .71 | 4.11 | 194 | .00 |
| | Male | 66 | 2.28 | .94 | | | |
| Item 8 | Female | 130 | 4.40 | .53 | 2.03 | 194 | .04 |
| | Male | 66 | 4.21 | .73 | | | |
| Item 12 | Female | 130 | 2.10 | .84 | 2.16 | 194 | .03 |
| | Male | 66 | 2.40 | 1.05 | | | |
| Item 13 | Female | 130 | 1.70 | .84 | 3.21 | 194 | .00 |
| | Male | 66 | 2.16 | 1.15 | | | |
| Item 18 | Female | 130 | 4.50 | .63 | 3.34 | 194 | .00 |
| | Male | 66 | 4.13 | .85 | | | |
| Item 19 | Female | 130 | 4.38 | .56 | 2.58 | 194 | .01 |
| | Male | 66 | 4.15 | .66 | | | |
| Item 21 | Female | 130 | 1.86 | .87 | 2.69 | 194 | .00 |
| | Male | 66 | 2.24 | 1.03 | | | |
| Total | Female | 130 | 101.26 | 6.68 | .11 | 194 | .91 |
| | Male | 66 | 101.12 | 9.81 | | | |

According to the table above, female participants (X=4.57) showed more positive view compared to male participants (X=4.30) towards the item as "Use of materials in the lessons embodies the concepts" (X=4.30) (r=0.00, p<0.05). Again, females (X=4.58) declared more positive feelings than males (4.36) towards the item as "Use of materials in the lessons enhances the attentiveness" (r=0.02, p<0.05). For the item as "Use of materials plays an important role in the increase in achievement", female participants (X=4.40) showed more positive attitude in comparison with males X=(4.21) (r=0.04, p<0.05). Female participants (X=4.50) reported a more positive attitude towards the item as "Teaching using materials leads to a more enjoyable lesson" compared to males (X=4.13) (r=0.00, p<0.05). Females (X=4.38) declared more positive feelings than males (4.15) towards the item as "Use of materials in the lessons increases the enthusiasm of learners" (r=0.01, p<0.05). For the item as "Use of materials doesn't have an effect upon the motivation of learners", male participants (X=2.28) agreed more in comparison with females (X=1.79) (r=0.00, p<0.05). For the item as "Use of materials doesn't have an effect upon the imagination of learners", male participants (X=2.40) agreed more in comparison with females X=(2.10) (r=0.03, p<0.05). For the item as "Use of materials is not one of the elements that facilitates learning", male participants (X=2.16) agreed more in comparison with females (X=1.70) (r=0.00, p<0.05). For the item as "Use of materials is not one of the elements that facilitates learning", male participants (X=2.16) agreed more in comparison with females X=(1.70) (r=0.00, p<0.05). For the item as "I think that use of materials saves up time in lessons", male participants (X=2.24) agreed more compared to females (X=1.86) (r=0.00, p<0.05). As shown in the table, the overall assessment of the average female and male teachers in a statistically significant difference was found between the mean pre-service teachers.

Is there a significant difference in the views according to educational level among the pre-service teachers who were taught using Moodle in Instructional Technologies and Material Design on the use of materials in lessons?

Table 2. The relationship between educational level and views on the use of materials among the pre-service teachers

| Items | Educational Level | N | X | S.S. | t | df | Sig. |
|---|---|---|---|---|---|---|---|
| Item 3 | Undergradute | 112 | 4.62 | .53 | 2.13 | 194 | .03 |
| | Master's without thesis | 84 | 4.45 | .58 | | | |
| Item 7 | Undergraduate | 112 | 4.49 | .55 | 2.30 | 194 | .02 |
| | Master's without thesis | 84 | 4.30 | .53 | | | |
| Total | Undergraduate | 112 | 101.33 | 8.53 | .83 | 194 | .81 |
| | Master's without thesis | 84 | 101.05 | 6.89 | | | |

Undergraduate participants (X=4.62) reported a more positive attitude towards the item as "Teaching using materials leads to a better understanding of topic since it provides visual elements" compared to participants in the Master's program without thesis (X=4.45) (r=0.03, p<0.05). For the item as "Use of materials ensures permanent learning", undergraduate participants (X=4.49) agreed more in comparison with pre-service teachers in the Master's program without thesis X=(4.30) (r=0.02, p<0.05). Non-thesis degree rise with the overall evaluation, undergraduate teacher candidates in a statistically significant difference was found between the opinions of pre-service teachers.

Is there a significant difference in the views according to age among the pre-service teachers who were taught using Moodle in Instructional Technologies and Material Design on the use of materials in lessons?

No significant difference was found out in the views on the use of materials in lessons according to age among the pre-service teachers who were taught using Moodle in Instructional Technologies and Material Design on the use of materials in lessons.

Is there a significant difference in the views according to the place they live among the pre-service teachers who were taught using Moodle in Instructional Technologies and Material Design on the use of materials in lessons?

No significant difference was found out in the views on the use of materials in lessons according to the places they live among the pre-service teachers who were taught using Moodle in Instructional Technologies and Material Design on the use of materials in lessons.

## 4. Discussion and Conclusion

In general view of the study:

The views of pre-service teachers who were taught with Moodle in Instructional Technologies and Material Design on the use of materials were found out to be positive. As mentioned previously in the findings section, no significant difference was found out in the views on the use of materials in lessons according to gender among the participants. Differences were seen in the responses to items 1, 2, 8, 18 and 19 in favor of females and for the items 4, 12, 13 and 21 in favor of males. These findings support the findings of Ensari and Kete (2010). However, gender-related difference wasn't found in the general assessment.

According to the results, there is a difference in items 3 and 7 in favor of undergraduate participants in terms of educational level. No significant difference was found out in the views on the use of materials in lessons according to age and place they live.

According to the researches carried out so far, it is known that use of materials have positive outcomes. For instance, according to Akbulut and Karakuş (2008), Mathew ve Dohery-Poirier (2000), Poindexter ve Heck, (1999), Karaman (2007), Karabektaş (2004) ve Aktürk, Şahin, Sünbül (2008) pre-service teachers report that teaching oriented websites enhance the attentiveness, activate the students, provide a meaningful and permanent learning, help to embody the abstract topics, save up time and materials and finally allowing for time to study out of the classroom. All the findings listed here are in parallel with the findings mentioned in this study.

It was found out that computer-assisted teaching helps student to learn easily and such activities support learning by providing visualization (Peat & Franklin, 2002). According to findings of Soyibo and Hudson (2000), in their study exploring the contribution of computer-assisted teaching to students' understanding of biology, it was found out that the experimental group's achievement (direct teaching, discussion and computer-assisted teaching methods were used) was higher than that of the control group to whom only traditional method of teaching was applied.

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